



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/494,940	02/01/2000	Yoshihiro Hara	024055-088	4143
21839	7590	02/17/2004	EXAMINER	
BURNS DOANE SWECKER & MATHIS L L P POST OFFICE BOX 1404 ALEXANDRIA, VA 22313-1404			VILLECCO, JOHN M	
		ART UNIT	PAPER NUMBER	
		2612	7	
DATE MAILED: 02/17/2004				

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)
	09/494,940	HARA ET AL.
	Examiner	Art Unit
	John M. Villecco	2612

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on ____.
- 2a) This action is FINAL. 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 1-27 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) Claim(s) ____ is/are allowed.
- 6) Claim(s) 1-3,6-9,11,13 and 15-27 is/are rejected.
- 7) Claim(s) 4,5,10,12 and 14 is/are objected to.
- 8) Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on 01 February 2000 is/are: a) accepted or b) objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. ____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 13) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
 - a) The translation of the foreign language provisional application has been received.
- 14) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). ____ . |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) <u>3 and 5</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Specification

1. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

2. The disclosure is objected to because of the following informalities:
 - On page 2, line 10, applicant recites the heading “Summery of the Invention”. This appears to be a spelling error and that the applicant meant to use the phrase – Summary of the Invention –.

Appropriate correction is required.

Claim Objections

3. Claim 10 is objected to because of the following informalities:
 - In claim 10, line 2, applicant recites the phrase “the sifting of the regions”. This appears to be a typographical error and that the applicant meant to use the phrase – the shifting of the regions –.

4. Appropriate correction is required.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claim 21 is rejected under 35 U.S.C. 102(b) as being anticipated by Kodama

(Japanese Publ. No. 09-261526 A).

7. Regarding *claim 21*, Kodama discloses an image pickup means (2), and a memory means (5) for storing an image and correcting image data based on a blur amount. Additional image data a corrected and then added to the original image to form an optimal image. See paragraph 15.

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 26 and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Platte et al. (U.S. Patent No. 4,864,409).

10. Regarding *claim 26*, Kaneda discloses a television camera capable of correcting for acceleration to the body of the camera. The system includes a CCD (1) for picking up an image of the object and a controller (8) for controlling the read out of a desired field (2).

Kaneda fails to explicitly state that the image data is gradually enlarged when the image data is taken. However, Official Notice is taken as to the fact that it is well known in the art to perform an electronic zooming operation on images captured by a CCD. Furthermore, it is well

known in the art to allow a camera to perform electronic zooming under several different magnifications. This feature allows a user to pick up only a portion of the image without the use of a zooming lens system, thereby promoting miniaturization and decreased costs. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate an electronic zoom in the camera of Platte so that the above-mentioned advantages can be achieved.

11. As for *claim 27*, Kaneda discloses that the imaging region (2) is displaced an amount (Δx , Δy), in which the imaging region (2) remains at a constant size. Therefore, the center of a region (2) from which the image data are read is inherently shifted based on a quantity and direction of movement, between the time the first image is taken to a time after the second image is taken.

12. Claims 19 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kodama (Japanese Publ. No. 09-261526 A) in view of Nakagawa (U.S. Patent No. 5,335,016).

13. Regarding *claim 19*, Kodama discloses a camera system for memorizing a plurality of image data which includes a memory region (5) for memorizing data. Kodama determines a number of images to be captured and stored each of the images in the memory region (5).

Kodama, however, fails to explicitly disclose a controller for compressing image data into the memory, wherein the controller selects a compression ratio corresponding to a condition when the image data are taken. Nakagawa, on the other hand, discloses that it is well known in the art to set a compression ratio based on the number of images set. This allows more efficient

Art Unit: 2612

use of the memory. Therefore, it would have been obvious to one of ordinary skill in the art to adjust the compression ratio of Kodama based on the number of images taken so that the memory usage is optimized. See column 17, line 67 to column 18, line 6.

14. As for *claim 20*, Nakagawa discloses that the compression ratio is adjusted based upon the number of image taking operations.

15. Claims 22-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kodama (Japanese Publ. No. 09-261526 A) in view of Ohta et al. (U.S. Patent No. 5,689,611).

16. Regarding *claim 22*, Kodama discloses an image pickup means (2), and a memory means (5) for storing an image and correcting image data based on a blur amount. Additional image data a corrected and then added to the original image to form an optimal image. See paragraph 15.

Kodama, however, does not explicitly state that the image data and data corresponding to the image are stored and then composited after completing the entire image taking operations. Ohta, on the other hand, discloses that it is well known in the art to store both the images and the motion vector data to be used in reproduction at a later time. In this case, the later time would be after the completion of all of the image taking operations. Clearly, when both of the image data and the other data are stored separately without using the other data in processing the image, the processing time can be reduced for image pickup. See column 9, line 64 to column 11, line 12. Although used for generating panoramic images it would have been obvious to implement this system in a shake correcting camera so processing time could be reduced. Therefore, it would

have been obvious to one of ordinary skill in the art at the time the invention was made to complete the photographing of the images and the collection of data corresponding to the image before compositing so that processing time in the image capture routine can be reduced and the production of the panoramic image can be performed at a later time.

17. As for *claim 23*, Ohta discloses that each of the images uses the video subcode to correct the image data relatively to the other image data based on the detected motion vector. The image data are then composited for form a composite image.

18. With regard to *claim 24*, Ohta discloses that the data for each image includes a panning indication and a motion vector for each image, which would inherently include a quantity and direction of movement. Ohta discloses that a plurality of image would be captured and used to for the panoramic image. Therefore, the data is captured for the first image through the last image.

19. Regarding *claim 25*, Kodama discloses that each image is taken in an exposure time equal to or shorter than a limit exposure time causing camera shake. See paragraphs 17-22.

20. Claims 1-3, 6, and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hamamura et al. (U.S. Publ. No. 2003/0133021) in view of Kodama (Japanese Publ. No. 09-261526 A).

21. Regarding *claim 1*, Hamamura discloses a CCD (103) for taking an image, a luminance sensor (12) for sensing the luminance of the object, and an underexposure unit (212) for judging whether a proper exposure time is longer than a predetermined exposure time. The exposure time setting unit (211) sets an exposure time of the CCD. When the underexposure determining

Art Unit: 2612

unit determines that the suitable exposure time is greater than a hand vibration time limit, the camera adjusts the gain to accommodate. See paragraphs 29-31.

Hamamura, however, fails to disclose that instead of changing the gain after the exposure exceeds a hand vibration time limit, a plurality of images are taken to accommodate for the hand shake. Kodama, on the other hand discloses that it is well known in the art to take multiple exposures of the same scene based on the amount of hand shake and whether or not the calculated exposure time exceeds a hand shake time limit. It is well known that increasing the gain of a system can increase the noise in the image. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to capture multiple images and combine them to form a high quality image instead of increasing the gain so that an image that is free of increased noise is produced. See paragraphs 13 and 17-26.

22. As for *claim 2*, Kodama discloses that the plurality of image data of the same object are composited for forming a single image. See paragraph 15.

23. With regard to *claim 3*, Kodama discloses compositing the plurality of images to form an optimal image with proper exposure quantity.

24. Regarding *claim 6*, Kodama discloses the ability to determine the amount of blurring and then aligning each of the images after determining how much the images are offset from each other. The process of determining the offset of the images before combining is interpreted to be data correction. See Figure 4.

25. As for *claim 15*, Kodama discloses that each image is processed and the amount of offset in the X and Y directions is determined. The amount of movement can be accomplished with any of a plurality of sensors. See paragraph 29. A detection of movement is performed for each

image. After the determination, the images are combined, one after another, to form a high quality image.

26. **Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hamamura et al. (U.S. Publ. No. 2003/0133021) in view of Kodama (Japanese Publ. No. 09-261526 A) and further in view of Ohta et al. (U.S. Patent No. 5,689,611).**

27. Regarding *claim 16*, as mentioned above in the discussion of claim 6, both Hamamura and Kodama disclose all of the limitations of the parent claim. However, neither of the aforementioned references discloses that the image data and data corresponding to the image are stored and then composited after completing all of the image taking operations. Ohta, on the other hand, discloses that it is well known in the art to store both the images and the motion vector data to be used in reproduction at a later time. In this case, the later time would be after the completion of all of the image taking operations. Clearly, when both of the image data and the other data are stored separately without using the other data in processing the image, the processing time can be reduced for image pickup. See column 9, line 64 to column 11, line 12. Although used for generating panoramic images it would have been obvious to implement this system in a shake correcting camera so processing time could be reduced. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to complete the photographing of the images and the collection of data corresponding to the image before compositing so that processing time in the image capture routine can be reduced and the production of the composite image can be performed at a later time.

28. Claims 17 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hamamura et al. (U.S. Publ. No. 2003/0133021) in view of Kodama (Japanese Publ. No. 09-261526 A) and further in view of Ohta et al. (U.S. Patent No. 5,689,611) and Nakagawa (U.S. Patent No. 5,335,016).

29. Regarding *claim 17*, as mentioned above in the discussion of claim 16, Hamamura, Kodama and Ohta, disclose all of the limitations of the parent claim. However, none of the aforementioned references discloses that the images are compressed before storing them in memory. Nakagawa, on the other hand, discloses that it is well known in the art to compress images before storing them in memory. This allows more efficient use of the memory.

Therefore, it would have been obvious to one of ordinary skill in the art to compress the images before storing them so that memory is conserved. See column 17, line 67 to column 18, line 6.

30. As for *claim 18*, Nakagawa discloses that it is well known in the art to set a compression ratio based on the number of images set. This allows more efficient use of the memory. Therefore, it would have been obvious to one of ordinary skill in the art to adjust the compression ratio of Kodama based on the number of images taken so that the memory usage is optimized. See column 17, line 67 to column 18, line 6.

31. Claims 7, 8, and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hamamura et al. (U.S. Publ. No. 2003/0133021) in view of Kodama (Japanese Publ. No. 09-261526 A) and further in view of Hisataka (Japanese Publ. No. 09-200606 A).

32. Regarding *claim 7*, as mentioned above in the discussion of claim 6, both Hamamura and Kodama disclose all of the limitations of the parent claim. However, neither of the

aforementioned references discloses that the correction of data is a correction of rotation shake around each axis. Hisataka, on the other hand, discloses that it is well known in the art to correct for rotational shake about all three axes. Hisataka teaches that the rotation about each of the axes is corrected by shifting subsequent images, to be aligned with previous images. The image is shifted in the X and Y directions and then tilted about the optical axis. Hence, the image is corrected for rotation shake about each axis. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to correct the rotation shake about each axis so that a high quality image is obtained which is corrected for rotational shake.

33. As for *claim 8*, Hisataka discloses that the rotation shake about the optical axis is performed by rotating the image about the optical axis. Hisataka also, discloses that the correction of the other two axes is performed by translating the image and aligning it with the reference image. These constitute two different methods.

34. With regard to *claim 11*, Hisatake discloses that the image is first translated in the X and Y directions and then rotated about the optical axis.

35. Claims 9 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hamamura et al. (U.S. Publ. No. 2003/0133021) in view of Kodama (Japanese Publ. No. 09-261526 A) and further in view of Hisataka (Japanese Publ. No. 09-200606 A) and Platte et al. (U.S. Patent No. 4,864,409).

36. Regarding *claim 9*, as mentioned above in the discussion of claim 8, Hamamura, Kodama, and Hisataka, disclose all of the limitations of the parent claim. Additionally, Kodama and Hisataka disclose shifting regions from which image data are read out and furthermore,

Hisataka discloses rotating the image around the optical axis to correct for the rotation shake. However, none of the aforementioned references discloses an effective region larger than frame size. Platte, on the other hand, discloses that it is well known in the art to have an effective region larger than an image region. See Figure 1 and column 2, lines 13-44. This ensures that upon correction, there is enough data to form a high quality image. Therefore, it would have been obvious to one of ordinary skill in the art to have an effective region larger than the image region so that upon blurring the object is kept in the field of view and a high quality image of the subject can be formed.

37. As for *claim 13*, Platte discloses that the region from which the image data is read out (1) is larger than the actual frame size (2). See Figure 1.

Allowable Subject Matter

38. Claims 4, 5, 10, 12, and 14 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

39. The following is a statement of reasons for the indication of allowable subject matter:
Regarding *claims 4 and 5*, the primary reason for indication of allowable subject matter is that the prior art fails to teach or reasonably suggest the method of calculating the control exposure time and the number of image taking operations.

As for *claim 10*, the primary reason for indication of allowable subject matter is that the prior art fails to teach or reasonably suggest that the correcting of the image shake around the

two axes perpendicular to the optical axis are executed by a software process and the rotating of the image data around the optical axis is performed by a hardware process.

With regard to *claim 12*, the primary reason for indication of allowable subject matter is that the prior art fails to teach or reasonably suggest that the rotation shakes are corrected by affine conversion at the same time.

Regarding *claim 14*, the primary reason for indication of allowable subject matter is that the prior art fails to teach or reasonably suggest that that the region from which the image data are read out is gradually enlarged corresponding to the increase of the number of image taking operations.

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks
Washington, D.C. 20231

or faxed to:

(703) 872-9306 (For either formal or informal communications intended for entry. For informal or draft communications, please label "**PROPOSED**" or "**DRAFT**")

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington VA, Sixth Floor (Receptionist).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to John M. Villecco whose telephone number is (703) 305-1460. The examiner can normally be reached on Monday through Thursday from 7:00 am to 5:30 pm EST.

Art Unit: 2612

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wendy Garber, can be reached on (703) 305-4929. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the customer service desk whose telephone number is (703) 306-0377.

JMV
1/29/04

Wendy R. Garber
WENDY R. GARBER
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600